

REMARKS

In the Office Action, claims 1, 3, 10-12, 17-19, and 21 are rejected under 35 U.S.C. §102(a) as being unpatentable over U.S. Patent Number 6,641,542 to Cho et al.

In the Office Action, claims 2, 4, and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cho et al. in view of U.S. Patent No. 6,520,917 to Kunig et al.

In the Office Action, claims 15 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cho et al. in view of U.S. Patent No. 4,580,575 to Birnbaum et al.

In the Office Action, claims 14 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cho et al. in view of U.S. Patent Application Publication 2005/0115561 to Stahmann.

In the Office Action, claims 5-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In response thereto, claim 1 has been cancelled, claims 2-5, 8, 10, 17-19, and 22 have been amended, and new claims 23-32 have been added. Accordingly, claims 2-32 are now pending. Following is a discussion of the patentability of each of the pending claims.

Independent Claim 5

In the Office Action, claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, claim 5 has been rewritten in independent form including all of the limitations of base claim 1. It is respectfully submitted that amended claim 5 is in condition for allowance.

Dependent Claims 2, 3, 6, and 10-17

Claims 2, 3, 6, and 10-17 depend from claim 5 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 4

Claim 4 recites a method for detecting non-obstructive apnea within a patient using an implantable medical system. The method comprises the steps of monitoring diastolic blood pressure and detecting non-obstructive apnea within the patient based on changes in diastolic blood pressure. The step of detecting non-obstructive apnea within the patient based on changes in diastolic blood pressure includes the steps of tracking changes in diastolic blood pressure from beat to beat, identifying a period of time having a substantially uniform decrease in diastolic blood pressure from beat to beat, and associating non-obstructive apnea with the period of time having the substantially uniform decrease in the diastolic blood pressure from beat to beat.

It is apparently conceded that the Cho et al. reference does not disclose or suggest tracking changes in diastolic blood pressure from beat to beat, identifying a period of time having a substantially uniform decrease in diastolic blood pressure, and associating that period with non-obstructive apnea. For this reason, it appears the Examiner has introduced the Kunig et al. reference. The Kunig et al. reference is directed to a diagnostic and monitoring device to determine functionality of the cardiocirculatory system, to generate a cardiocirculatory performance scale for displaying in a performance diagram, and to measure cardiocirculatory functionality on the performance scale. Figure 4 illustrates a performance diagram generated from data, prior to, during, and after termination of obstructive sleep apnea. A physiological parameter AA is pulmonary artery pulse pressure (PP), A_1 is systolic pulmonary artery pressure (SBP), and A_2 is diastolic pulmonary artery pressure (DBP). PP, SBP, and DBP are displayed versus time at successive heart beats. The functionality of the cardiocirculatory system is the difference of A at two different times, AA, and is derived as $AA = A_1 - A_2$ (see formula 1). As such, in accordance with Figure 4 and formula 1, obstructive sleep apnea is related to the physiological parameter, PP, wherein PP is determined by determining the difference between the systolic pressure and the diastolic pressure from beat to beat. The Kunig et al. reference does not disclose or suggest tracking changes in diastolic blood pressure from beat to beat. As stated previously, the Kunig et al. reference relates obstructive sleep apnea by tracking changes in the difference between systolic pressure and diastolic pressure.

Furthermore, the Kunig et al. reference does not disclose or suggest identifying a period of time having a substantially uniform decrease in diastolic blood pressure and associating that period with non-obstructive apnea. It appears that the uniformity of the decrease is irrelevant in determining the apneic period.

The Birnbaum et al. reference is cited in combination with the Cho et al. reference because it allegedly discloses an alarm to alert a patient when apnea is detected. Nowhere does the Birnbaum et al. reference disclose or suggest tracking changes in diastolic blood pressure from beat to beat, identifying a period of time having a substantially uniform decrease in diastolic blood pressure from beat to beat, and associating non-obstructive apnea with the period of time having the substantially uniform decrease in the diastolic blood pressure from beat to beat.

The Stahmann reference is cited in combination with the Cho et al. reference because it allegedly discloses a method of apnea monitoring comprising delivery of apnea treatment using implanted stimulators to stimulate phrenic nerves. Nowhere does the Stahmann reference disclose or suggest tracking changes in diastolic blood pressure from beat to beat, identifying a period of time having a substantially uniform decrease in diastolic blood pressure from beat to beat, and associating non-obstructive apnea with the period of time having the substantially uniform decrease in the diastolic blood pressure from beat to beat.

Accordingly, it is respectfully submitted that claim 4 is in condition for allowance.

Dependent Claim 23

Claim 23 depends from claim 4 and is similarly patentable. Accordingly, it is respectfully submitted that claim 23 is in condition for allowance.

Independent Claim 8

In the Office Action, claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, claim 8 has been

rewritten in independent form including all of the limitations of base claim 1. It is respectfully submitted that amended claim 8 is in condition for allowance.

Dependent Claim 9

Claim 9 depends from claim 8 and is similarly patentable. Accordingly, it is respectfully submitted that claim 8 is in condition for allowance.

Independent Claim 18

For at least the same reasons discussed previously with regards to claim 4, it is respectfully submitted that claim 18 is in condition for allowance.

Dependent Claims 24-26

Claims 24-26 depend from claim 18 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 19

For at least the same reasons discussed previously with regards to claim 4, it is respectfully submitted that claim 19 is in condition for allowance.

Dependent Claims 20, 21, and 27-29

Claims 20, 21, and 27-29 depend from claim 19 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 22

For at least the same reasons discussed previously with regards to claim 4, it is respectfully submitted that claim 22 is in condition for allowance.

Dependent Claims 30-32

Claims 30-32 depend from claim 22 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

CONCLUSION

In light of the above amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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